

# *Contents*

*Preface* ix

## **Chapter 1 PRINCIPLES OF pH MEASUREMENTS**

1.1	Defining pH	1
1.2	Activity versus Concentration	3
1.3	pH Scale	6
1.4	pH Measuring System	10
1.5	Potential Error	16

## **Chapter 2 THE pH METER**

2.1	Basic pH Meter Circuitry	17
2.2	Readout	20
2.3	Temperature	23
2.4	Calibration	27
2.5	Other Functions	31
2.6	Types of Meters	32
2.7	Performance Specifications	33

**Chapter 3 ELECTRODES**

3.1 Glass Electrodes	41
3.2 Reference Electrodes	53
3.3 Combination Electrodes	72
3.4 Electrode Selection	75
3.5 Storage of Electrodes	76

**Chapter 4 STANDARD SOLUTIONS (BUFFERS)**

4.1 Characteristics	80
4.2 Buffer Composition—Primary	82
4.3 Other Buffers	83
4.4 Special Buffers	84
4.5 Verification of a Buffer	92

**Chapter 5 pH MEASUREMENT TECHNIQUE**

5.1 Rinsing	95
5.2 Stirring	96
5.3 Response	98
5.4 Temperature	101
5.5 Sequence of Operation	103
5.6 Operational Precautions	105
5.7 Factors of Accuracy	107
5.8 Recommendations for Accurate pH Measurements	107

**Chapter 6 APPLICATIONS**

6.1 General Approach	109
6.2 Difficult Samples	112

<i>Contents</i>		vii
<b>Chapter 7</b>	<b>TROUBLESHOOTING</b>	
	7.1 pH Meter Test	139
	7.2 Glass Electrode Test	142
	7.3 Reference Electrode Test	143
	7.4 System Comparison	143
	7.5 Conclusion	146
<b>Appendix</b>	<b>TABLES OF DATA</b>	147
<i>Glossary</i>		157
<i>Index</i>		167